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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,546	01/27/2005	Hidetsugu Ikeda	OHTN:021	8499

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EXAMINER	
CROUSE, BRETT ALAN	
ART UNIT	**PAPER NUMBER**
1774	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/522,546	IKEDA ET AL.	
	Examiner	Art Unit	
	Brett A. Crouse	1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20070405;20050127*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 12 August 2002. It is noted, however, that applicant has not filed a certified copy of the JP 2002-234833 application as required by 35 U.S.C. 119(b).

Miscellaneous

The limitation of a connecting group as in formulae 1 through 4 is being interpreted as any group connecting groups suitable for the remaining elements of the formula. Examples of connecting groups are provided on page 5, lines 1-5 of the specification, however no descriptive limit is set on what constitutes the bounds of the connecting group L.

There appears to be a typographical error on line 13 of claim 2 of the pre-amendment. □-naphthyl was β-naphthyl in the original claims.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9 and 13 include the limitation a main component. It is unclear as to what constitutes a main component.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-9 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Shi et al., US 5,935,721 hereinafter known as Shi.

Shi teaches:

As to claims 1, 2 and 14:

Column 6, line 53 through column 8, line 19, formula 1, teach compounds useful as light emitting compounds in the luminescent layer of an organic electroluminescent device.

Column 2, lines 9-63, teach an electroluminescent device structure comprising an anode, cathode and organic electroluminescent element therebetween said electroluminescent element comprising a compound of formula 1. The passage additionally teaches that the device can produce bright blue emission.

Column 7/8 through column 47, provide numerous examples of compounds of formula 1, which meet the limitations of the instant invention.

Attention is directed to compounds 28-31, columns 17/18 and 19/20:

Compound 28 is used as an illustration.

Opposite formula (1) of the instant invention, substituted phenanthrene – anthracene – substituted phenanthrene satisfies formula (1) with Ar1, having 5 to 30 nuclear atoms, - Ch, having 14 to 20 nuclear atoms, - Ar2, having 5 to 30 nuclear atoms.

Opposite formula (2) of the instant invention, treating L as a single bond, phenanthrene – anthracene with the second phenanthrene as a substituent of the anthracene satisfies formula (2). Additionally, treating the anthracene group as L with phenanthrene for each of Ch1 and Ch2 will satisfy formula (2) as each group contains 14 to 20 nuclear atoms.

Opposite formula (3) of the instant invention, when both a and b are zero the formula is equivalent to formula (1) of the instant invention. Additionally, formula (3) is satisfied when a and b are 1 or when one of a and b is one and one of a and b is zero. Compound 28 additionally satisfies formula (4).

Attention is directed to compound 34, columns 21/22:

Opposite formula (3) of the instant invention, with a and b equal to zero and an anthracene group acting as Ch3, the rings whether phenyl or naphthyl satisfy the requirements for the Ar's of having 5 to 30 nuclear atoms.

Opposite formula (3) of the instant invention, with a and b equal to one, working from left to right through compound 34, Ar3 is anthracenyl with phenyl as a substituent, L1 is naphthyl, Ch3 is anthracenyl, L2 is naphthyl, Ar4 is anthracenyl with the phenyl as a substituent.

Opposite formula (4) of the instant invention, with n equal to one, m equal to zero, and L as a single bond, working from left to right through compound 34, Ar5 is phenyl, Ch4 is

anthracenyl, Ar7 is naphthyl, Ch5 is anthracenyl, and Ar6 is naphthyl. Additionally, compound 34 satisfies formulae (1) and (2).

As to claims 3 and 4:

Compounds 28-31, columns 17/18 and 19/20 provide examples of compounds of formula 1 which meet the limitations of formula (2) of the instant invention containing phenanthrene, pyrene, and perylene.

Compound 28, columns 17/18, provides an example of a compound of formula 1 which meets the limitations of formulae (1) and (2) of the instant invention containing phenanthrene groups which meet the limitations of claim 3.

Compound 28, column 17/18 provides an example of a compound of formula 1 which meets the limitations of formulae (3) and (4) of the instant invention containing phenanthrene groups which meet the limitations of claim 4.

As to claims 5-9 and 14:

Column 53, line 59 through column 57, line 63, examples 4-11, teach electroluminescent devices comprising a compound meeting the limitations of claim 1 of the instant invention, (compound 1, column 7/8), as a light emitting material used in the light emitting layer. The color of light emitted by the devices of examples 4-8 is blue. The statement of intended use is given little patentable weight with respect to claim 6.

Claims 1, 3, 5, 7-9 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Kohama et al., JP 2002-063988, hereinafter known as Kohama.

Kohama teaches:

As to claims 1 and 3:

Paragraphs [0020]-[0024] and [0026], formula 2, teach fluorescent pyrene compounds. Paragraph [0026] provides various example compounds having pyrene as a central group and aromatic groups having from 5 to 30 nuclear atoms bonded thereto. The compounds satisfy the structural formula (1) of the instant invention. Additionally, the dianthrylpyrene compound satisfies formula (2).

As to claims 5, 7-9 and 14

Paragraphs [0037]-[0040], examples 1-3, teach electroluminescent devices comprising a cathode, anode, and luminescent layer therebetween, wherein the luminescent layer comprises alone or as the majority component host material a substituted pyrene compound which satisfies formulae (1) and (3) of the instant invention. The devices of examples 1-3 emit blue light.

Claims 1-10 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Maki et al., JP 2000-012229 hereinafter known as Maki.

Maki teaches:

As to claims 1-4:

Paragraphs [0006]-[0014], formula 1, teach phenanthrene derivatives as organic electroluminescence materials.

Paragraphs [0016]-[0028], provide example compounds of formula 1. Attention is directed to compounds 1-24 and 31-35, which satisfy formulae (1) and (3) as presented in

claims 1 and 2 of the instant invention. The compounds satisfy the structural formula (3) of the instant invention when a and b of formula (3) are zero or a and b are one and L is a single bond.

As to claims 5-10 and 12-14:

Paragraphs [0030]-[0032], teach electroluminescent device structures comprising a compound of formula 1 as a luminescent material used in the luminescent layer, either alone or as a host material in combination with other compounds. Additionally, the passage teaches that compounds of formula 1 possess excellent hole transport properties and can be used in the hole injection layer(s) of an electroluminescent device.

Paragraph [0033], teaches that compounds of formula 1 can be used in combination with styryl and aryl amines in the luminous layer of an electroluminescent device.

Paragraphs [0044]-[0061], examples, teaches electroluminescent devices comprising compounds of formula 1 in the luminous layer. The device recited in paragraph [0046] emits blue light. The device recited in paragraph [0051] uses compound 4 as the hole injection layer. The device recited in paragraph [0053] incorporates an arylamine in the luminescent layer. Additionally, compounds 1-24 and 31-35, as referenced above meet the limitation of an arylamine compound. The device recited in paragraph [0054] uses compound 1 as a host material in the luminescent layer.

Claim Rejections - 35 USC § 103

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shi et al., US 5,935,721 hereinafter known as Shi as applied to claims 1-9 and 14 above.

The teachings of Shi as in the above rejection are relied upon.

Shi teaches:

Column 47, line 59 through column 48, line 22, teaches that a preferred embodiment of the luminescent layer is a multi-component layer in which the compound of formula 1 is used as the host. Dopants to enhance blue emission include arylamines

Shi does not teach:

Shi does not provide an example of the use of an arylamine dopant. It would have been obvious to one of ordinary skill in the art to incorporate an amine dopant into the device of Shi to produce the preferred luminescent layer of Shi with an expectation of success in producing a highly efficient device with tuned light output as taught by Shi.

Claim 11 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Maki et al., JP 2000-012229 hereinafter known as Maki as applied to claims 1-10 and 12-14 above.

The teachings of Maki as in the rejection above are relied upon.

The teachings of paragraph [0033] are held to anticipate the combination of a styrylamine and a compound of formula (1) in the luminous layer of an electroluminescent device. In the alternative if it is found that the lack of a specific example in which a styrylamine is used with a compound of formula 1 renders the reference non-anticipatory then it would have been obvious to one of ordinary skill in the art to use a styrylamine in conjunction with a compound of formula 1 of Maki, such as any of compounds 1-24 and 31-35, to form a luminescent layer in the device

of Maki as taught by Maki with an expectation of success based on the teachings of Maki such as in paragraph [0033].

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Additional references cited in the two IDS currently of record could be applied under 35 USC 102 against at least one of the claims currently pending.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brett A. Crouse whose telephone number is 571-272-6494. The examiner can normally be reached on Monday - Friday 6:00AM - 2:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BAC

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